REMARKS

The Official Action mailed December 3, 2002 has been received and its contents carefully noted. Filed concurrently herewith is a *Request for Three Month Extension of Time* which extends the shortened statutory period for response to June 3, 2003. Accordingly, Applicant respectfully submits that this response is being timely filed.

Applicants note with appreciation the consideration of the Information Disclosure Statement filed on February 6, 2001. Applicant awaits consideration of the Submission of International Preliminary Examination Report filed on November 15, 2002.

Claims 1, 2, and 4-14 are pending in the present application, of which claims 4-7 and 11-14 have been withdrawn from consideration leaving claims 1-2 and 8-10 subject to examination. For the reasons set forth in detail below, these claims are believed to be in condition for allowance.

Paragraph 2 of the Official Action rejects claims 1-2 and 8-10 as obvious based on the combination of U.S. Patent 5,528,697 to Saito and U.S. Patent 5,894,263 to Shimakawa et al. For the reasons set forth in detail below, Applicants respectfully submit that the Official Action has failed to establish a *prima facie* case of obviousness and reconsideration is requested.

As stated in MPEP § 2143-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab,* 217 F.3d 1365,

1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The Official Action asserts Saito discloses an electromagnetic actuator in Figure 5 that discloses the claimed invention except for the magnet being a ring shaped magnet magnetized with a south pole located at one of an outer or inner periphery and a north pole at the other of the outer or inner periphery of the magnet. The Official Action further asserts that Shimakawa discloses a ring magnet 19 that is radially magnetized. The Official Action asserts that it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the polarization design (i.e. magnet 19) of Shimakawa for the magnet of Saito for the purpose of providing improved flux density.

Claim 1 is amended herewith to further clarify the present invention. As amended, claim 1 recites that the magnet is divided into at least two pieces and is formed in a ring shape, and that the magnet yoke is assembled with a spacer between the magnet yoke and the magnet. These features are supported by at least Figure 2 of the present specification showing magnet 20 and spacer 24.

As recited in amended claim 1, the ring magnet is radially magnetized and is divided into at least two pieces. By dividing ring magnet 20 into at least two pieces, it becomes easier to place the ring magnet 20 in magnet yoke 21. Furthermore, it becomes possible to reduce the size of ring magnet 20 and still obtain the desired magnetic flux density. Miniaturization of an electromagnetic actuator in accordance with the present invention is desirable because the electromagnetic actuator is mounted in portable electronic equipment. As a result, it is desirable for ring magnet 20 that is mounted in the electromagnetic actuator to be formed with a very small diameter. To obtain the desired magnetic flux density, when the diameter of the ring magnet 20 becomes small, the magnetic flux must be concentrated. However, since the magnetic flux is limited, the diameter is driven to be enlarged in order to obtain the desired magnetic flux density until the shape of the magnet 20 is a ring. But by dividing the ring magnet 20 in accordance with the present invention, and forming the ring magnet 20 from at least two pieces as shown in Figure 3, it is possible to more easily achieve the

desired flux density. Therefore, division of the ring magnet 20 is very effective to obtain the desired magnetic flux density, without enlarging the diameter of the ring magnet.

Additionally, as now recited in claim 1 as amended herewith, magnetic yoke 21 is assembled with a spacer 24 between it and magnet 20. By use of the spacer 24 and the placement of the magnet 20 on the top, the magnet 20 will not slip down inside magnetic yoke 21. Accordingly even if the magnetic yoke 21 is vibrated with the action of magnetism, it becomes possible to stabilize second vibrator 2.

To the contrary, magnet 19 of Shimakawa is a single ring magnet and it is not disclosed or suggested to divide the single ring magnet of Shimakawa into a plurality of pieces as now recited in claim 1 of the subject application. Additionally it is not disclosed or suggested to assemble a spacer between yoke 18 and magnet 19 of Shimakawa. Therefore, since the prior art of record, whether taken alone or in combination, fail to disclose or suggest each and every feature of the present invention, it is respectfully submitted that a *prima facie* case of obviousness cannot be maintained and favorable reconsideration is requested.

The Official Action next rejects claims 8-10 as obvious based on Saito. While the Official Action again makes reference to a rejection under 35 U.S.C. 112, second paragraph, no such rejection can be found and thus the claims are understood to be in accord with 35 U.S.C. 112, second paragraph.

The Official Action asserts that Saito discloses the present invention except for the specific support structure of the vibration plates with the casing and that such support structure would have been an obvious design consideration based on the specific application of the device. Applicant respectfully disagrees and asserts that the Official Action has failed to establish a *prima facie* case of obviousness.

With reference to claim 8 of the subject application, the support structure recited therein supports vibration plate (22, 23 in Figure 1) within basket (3 in Figure 1) by an elastic piece (33 in Figure 1) that presses against a surface of an outer rim of the vibration plate. By supporting the vibration plate with the elastic piece, the vibration plate can be assembled within the basket using elastic force. Thus because the vibration plate is supported flexibly, it becomes possible to precisely control the vibration characteristics of the second vibrator 2.

On the other hand, in Figure 5 of Saito, the vibration plate is solidly fixed directly within the basket. As a result, it is possible that increasing vibration force is generated from the magnetic circuit (in other words the second vibrator 2). But the vibration characteristic of the magnetic circuit cannot be controlled precisely. Adding the elastic force in the fix point of the vibration plate is very effective for improving the vibration characteristic.

With reference to claim 9, a support structure has a protrusion that projects inward from an outer wall of the elastic piece. By pressing the vibration plates 22, 23 with the elastic piece 33 and establishing the protrusion 33b to the elastic piece 33, it is possible to buffer large vibrations of the vibration plate 22, 23 in a vertical direction by contact between the vibration plates 22, 23 and the protrusion 33b. Additionally, it is possible to restrain sideways shaking of the second vibrator 2 by the protrusion 33b. Therefore, distortion of the vibration plates 22, 23 is prevented.

With reference to claim 10, a structure supports the coil by a concentric projection. Thus, all of the coil 10 can be inserted into a magnetic gap G while the size of the coil 10 is kept to a small size. Accordingly vibration of the second vibrator 2 by the magnetic action that is generated when current is impressed to the coil is highly efficient. On the other hand, when supporting the coil directly on the surface of the diaphragm, as shown, for example, in Figure 5 of the Saito, all the coil cannot be inserted into a magnetic gap. Accordingly the efficiency is reduced.

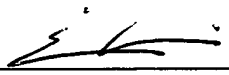
In each case, it is respectfully submitted that Saito fails to disclose or suggest the specific features recited in claims 8-10 of the subject application. The Official Action appears to rely on the assertion that these features of the support structure would be obvious design considerations based on the application of the device. It is respectfully submitted, however, that the prior art fails to provide any suggestion that the device of Saito should be modified to achieve the present invention and that the Official Action has failed to provide a convincing line of reasoning as to why one of skill in the art would have been motivated to so modify Saito. That is, the Official Action does not adequately set forth why one of skill in the art would combine the references to achieve the present invention. MPEP § 2142 states: "The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. 'To support the

conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.' *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985)."

It is respectfully submitted that a *prima facie* case of obviousness cannot be maintained for at least these reasons and favorable reconsideration of the outstanding rejections of claims 8-10 is requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact Applicant's undersigned attorney at the telephone number listed below.

Respectfully submitted,



Eric J. Robinson
Reg. No. 38,285

Robinson Intellectual Property Law Office, P.C.
PMB 955
21010 Southbank Street
Potomac Falls, Virginia 20165
(571) 434-6789

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

1. An electromagnetic actuator having a coil on which current is applied, a magnet that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action when a high-frequency current is applied and a vibration plate that vibrates by magnetic action when a low-frequency current is applied, with the coil positioned within the magnetic gap and the coil, the magnet, the magnet yoke, the diaphragm, and the vibration plate are accommodated in a basket in which the magnet is divided into at least two pieces and is formed in a ring shape, and the magnet yoke is assembled with a spacer between the magnet yoke and the magnet, and the magnet is magnetized with a south pole located at one of an outer or inner periphery of the ring shape magnet and a north pole located at the other of an inner or outer periphery of the ring shape magnet, and the ring shape magnet is radially arrayed and positioned with an axis of its north and south poles parallel to the diaphragm and the vibration plate.